



RESEARCH HIGHLIGHT

May 2005

Socio-economic Series 05-014

CA 1
MH3
-2005
R014
c.1
GOVPUB

VARIATIONS IN HOUSING PRICES IN CANADA

INTRODUCTION

The significant increase in housing prices in Canada since the turn of the century has drawn the attention of analysts and researchers, who have sought to understand the reasons for these fluctuations, their dynamics and their impact on economic performance. The study seeks to explain variations in housing prices in Canada, both nationally and in major metropolitan regions. It takes into account factors that affect supply, as well as those affecting demand.

This study intends particularly to determine and analyze the dynamic reaction of actual housing prices when facing shocks to the major determinants, and to assess the relative importance of each in historical variations in housing prices. These assessments consider the dynamic relationships between the residential housing market and the rest of the economy. Dynamic reactions are not a measurement of the direct impact of the various determinants vis-à-vis housing prices.

The study also explores the effects of the real estate wealth involved in fluctuating housing prices on household expenses and, to a broader degree, on the level of economic activity in the regions in question. Variations of the reference model also bring into play actual property costs, the TSX stock market index and actual retail business sales.

METHODOLOGY

The study presents a fairly comprehensive review of recent empirical literature regarding the determination of housing prices, particularly within the scope of metropolitan regions or the themes in question. Most recent studies leaned heavily toward using, as an analysis framework, either error correction models when studying the direct effects of determinants, or vector autoregressive methods (VAR) when analyzing the dynamic impact of the various determinants in a systemic context.

The analysis uses quarterly data from 1972 to 2003 nationally and from 1975 to 2003 for the metropolitan regions. There were many limitations in building the database for the study, in terms of availability of data for metropolitan regions and historical discontinuity in statistical series. Nonetheless, the database is a major contribution to the project.

3 1761 116373176

Canada



The empirical analysis framework is a VAR. The reference VAR model has six variables:

- actual housing prices
- housing starts
- employment
- actual interest rates
- inflation
- actual construction costs

Variations in the reference model also bring into play actual land costs, the TSX stock market index and actual retail business sales. Estimates for metropolitan regions are probably sensitive to the limited size of the sampling. To circumvent this problem, a *panel* estimate of all metropolitan regions was prepared. A *panel* estimate deals with several samples of corresponding chronological series as a group, for example, in various regions.

This approach served as the basis for comparing the results of estimates for each metropolitan region. Ten census metropolitan areas were chosen for the purposes of the study: Halifax, Québec City, Montréal, Ottawa-Gatineau, Toronto, Hamilton, Winnipeg, Calgary, Edmonton and Vancouver.

MAIN RESULTS

The national results prove the most interesting. It would seem that monetary shocks (or actual interest rates) are, historically, the main determinant in housing prices in Canada over the period in question. They explain some 22 per cent of variations. Even more surprising is the considerable contribution of inflation, at 15 per cent. The effect of inflation on actual housing prices is clearly negative.

In the recent context of low, steady inflation, one could think that actual housing prices would tend to be more stable and see a higher growth. Employment shocks, with an 11 per cent contribution to variations in actual housing prices, is a major determinant, but less than expected at the outset. Finally, the two supply factors taken into consideration, housing starts and actual construction costs, are minor determinants, according to the results.

As far as the analyses of metropolitan regions are concerned, the results show that the various urban centres are sensitive to different shocks that, in many cases, vary considerably from one community to another. The same can be said for the importance of various shocks in explaining historical variations in housing prices. Generally, the results for metropolitan regions suggest that inflation constitutes the dominant factor in most urban centres. As for Canada, dynamic responses indicate a negative effect of inflationary shocks on variations in actual housing prices. Monetary shocks contribute significantly, but less so than nationally. One surprise is the minor effect of employment as a determinant. This low level of influence is countered by a greater role for housing starts. Finally, as for Canada, construction costs play a minor role in metropolitan regions.

In terms of the dynamic of the effects, in all the results, we see long delays due to monetary shocks and the increased and persistent reaction of housing prices and starts because of their specific shocks. These characteristics suggest that the real estate market tends to overreact to shocks and is slow in levelling off.

In relation to the dynamic effects of shocks, certain comparisons can be made among metropolitan regions. The main similarities have a geographical logic. Thus, the regions of Calgary and Edmonton often have similar dynamic responses, as do Montréal and Québec City. Halifax and Ottawa-Gatineau, usually tend to be similar to Montréal and Québec City. In certain aspects, Toronto and Hamilton exhibit similar dynamics. Finally, Vancouver's dynamic reactions differ most from other urban centres. The fact remains that the various urban centres each show distinct housing-price dynamics.

In additional estimates, unexpected variations in land costs are probably a major determinant in housing prices, as shown by the estimated 25 per cent contribution.

The contribution of stock markets to historical fluctuations in actual housing prices varies, by region, from 2 per cent to 10 per cent. It is high in Vancouver (10 per cent) and Montréal (10 per cent). In almost all other regions, it is higher than that of employment shocks. Nationally, it is 14 per cent. These results must be interpreted, however, with great care. Stock markets are an advanced indicator of economic activity and that advance is tied more to future economic expectations included in stock indexes than to the effects of wealth that their variations imply.

The effect of fluctuations in housing prices on consumer spending and, more generally, on economic activity has also garnered much attention among researchers and analysts over the last few years. The only time when housing prices seem to have an effect on household spending is when there is a wealth effect. Estimates place the effect of housing prices on variations in retail sales at 4.3 per cent nationally, 2.1 per cent in Montréal, 2.8 per cent in Toronto, 1.4 per cent in Winnipeg and 3.6 per cent in Vancouver. Based on these figures, it would seem that housing prices constitute a significant determinant in household spending.

CONCLUSIONS

The strong results are weakened by the limited number of observations available, particularly for metropolitan areas. So-called *panel* estimates that include all centres were made in order to attempt to control sampling errors. VAR *panel* estimates, however, impose the same dynamic structure to all metropolitan regions. It would be interesting to partially remove these limitations by using a non-standard VAR *panel*.

It would be interesting to check whether the dynamic responses to the various shocks have changed over the years. Over the last 25 years, there have been many changes to the real estate market, particularly in terms of financing instruments. There is reason to believe that these major changes have had an effect on the behaviour of those involved in the real estate market and, as a result, on housing prices and construction activity. The study assumes that behaviour has not changed for the time being.

Housing prices were also studied using a general equilibrium model. Using the same database, it would have been interesting to study the direct effects of determinants on actual prices using error-correction models, which use the existence of long-term relationships in the real estate market. In these models, short-term dynamics are enriched by measuring market imbalances. This approach is particularly interesting in the context of a real estate market in which imbalances tend to persist. In this context, non-standard *panel* analyses are also much easier to conduct given the new functionalities of specialized statistics software.

CMHC Project Manager: Bruno Duhamel

Consultant: Yvon Fauvel, Department of Economics,
Université du Québec à Montréal

Housing Research at CMHC

Under Part IX of the *National Housing Act*, the Government of Canada provides funds to CMHC to conduct research into the social, economic and technical aspects of housing and related fields, and to undertake the publishing and distribution of the results of this research.

This fact sheet is one of a series intended to inform you of the nature and scope of CMHC's research.

To find more *Research Highlights* plus a wide variety of information products, visit our Web site at

www.cmhc.ca

or contact:

Canada Mortgage and Housing Corporation
700 Montreal Road
Ottawa, Ontario
K1A 0P7

Phone: 1 800 668-2642
Fax: 1 800 245-9274

©2005, Canada Mortgage and Housing Corporation
Printed in Canada
Produced by CMHC

01-04-05

OUR WEB SITE ADDRESS: www.cmhc.ca

Although this information product reflects housing experts' current knowledge, it is provided for general information purposes only. Any reliance or action taken based on the information, materials and techniques described are the responsibility of the user. Readers are advised to consult appropriate professional resources to determine what is safe and suitable in their particular case. Canada Mortgage and Housing Corporation assumes no responsibility for any consequence arising from use of the information, materials and techniques described.